

IQRA NATIONAL UNIVERSITY

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SECTION : A

MODULE : 8TH SEMESTER

Q No # 1 (1)
(part A)

Sol:-

(i) External length of building:-

$$= 14 + 14 + 2(1.25) + 0.75'$$

External length of building = 31 ft

(ii) External breadth of building:-

$$= 12 + 8 + 2(1.25) + 0.75$$

$$= 23 \text{ ft}$$

(ii) plinth area of building

$$= 31 \times 23 = 713 \text{ ft}^2$$

Rate of construction = Rs. 300 / SFT

$$\text{Cost of construction} = 713 \times 300$$

$$\text{Cost of construction} = 213900$$

Cost of water supply and sanitary is 10%

water supply and sanitary

$$= 213900 \times \frac{10}{100}$$

water supply and sanitary (2)

$$= 21390/-$$

$$\text{Cost of electric supply} = 213900 \times \frac{10}{100}$$

$$\text{Cost of electric supply} = 21390/-$$

$$\text{Cost of Gas supply} = 213900 \times \frac{5}{100}$$

$$\text{Cost of Gas supply} = 10695/-$$

$$\text{Total cost} = 213900 + 21390 + 21390 + 10695$$

$$\text{Total cost} = 267375/-$$

$$\text{Contingencies} = 267375 \times \frac{3}{100}$$

$$\text{Contingencies Rs} = 8021.25/-$$

$$\text{Ground total} = 267375 + 8021.25$$

$$\text{Ground total} = \text{RS} \cdot 275396.25/-$$

Ans

Q No # 1
(part B)

(3)

Solution:-

Step 1:- Total wall Length:-

$$\begin{aligned} \text{length of wall} &= 14 + 14 + 12 + 12 + 12 + 12 \\ &\quad + 14 + 14 + 8 + 8 + 8 + 8 + 4 + 8 + 4 \\ &= 164 \text{ sq. ft} \end{aligned}$$

$$A_s \text{ (sq.m)} = 10.76 \text{ sq.ft}$$

$$X \text{ sq.m} = 164 \text{ sq.ft}$$

$$164 = 10 \times X \Rightarrow X = \frac{164}{10}$$

$$X = 16.4 \text{ sq.m}$$

$$\text{wall area in sq.m} = 16.4 \text{ sq.m}$$

Step # 2:-

Deduct area of ~~door~~ door
from total area of wall

(4)

$$\text{Plaster Area} = 49.2 - 4(2\text{m}^2)$$

$$\text{Plaster Area} = 41.2 \text{ m}^2$$

Ans

Q No #2

(5)

Sol:- Step 1:- (length of bar
12 mm bottom bar)

length of steel $\phi 12$ mm = (length of
beam - cover) \times No. of bar

$$= [4000 - 2(30)] \times 2$$

$$= 7880 \text{ mm}$$

$$\text{or} \cdot = 7.8 \text{ m}$$

Step 2:- (length of bar $\phi 16$ mm top bar)

length of steel $\phi 16$ mm = (length of beam
- cover) \times No of bar

$$= 4000 - 2(30) \times 2$$

$$= 7880 \text{ mm} = 7.8 \text{ m}$$

Step 3:- (weight of bar $\phi 12$ mm)
bottom bar

$$= \left(\frac{d^2}{162} \right) \times L$$

Step # 6:- (Cutting length of stirrup)

$$\begin{aligned} & 2(x) + 2(y) + \text{hook} (10d) - \text{bend} (2df \times 90^\circ) \\ &= 2(132) + 2(132) + (2 \times 10 \times 8) - (5 \times 2 \times 8) \\ & 264 + 264 + 160 - 80 \\ &= 608 \text{ mm or } 0.608 \text{ m} \end{aligned}$$

Step # 7:- (Total length of stirrup)

$$\begin{aligned} & \text{Cutting length} \times \text{No of stirrup} \\ &= 0.608 \times 21 \\ &= 12.76 \text{ m} \end{aligned}$$

Step # 8:- (weight of stirrup)

$$\begin{aligned} & \left(\frac{d^2}{162} \right) \times L \\ &= \left(\frac{8^2}{162} \right) \times 12.76 \\ &= 5 \text{ kg} \end{aligned}$$

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SNO	Type of Bar	Dia(mm)	No's	Length (m)	Total length(m)	unit wt.kg	Total weight	Notes
1	Top bar	10	2	7.8	15.6	0.61	9.51	$\frac{d^2}{162} = \frac{10^2}{162} = 0.61$
2	Bottom bar	12	2	7.8	15.6	0.89	13.88	$\frac{d^2}{162} = \frac{12^2}{162} = 0.89$
				Total			23.394	
				Add 5% wastage =			1.16	

Gross total = 24.6 kg

Q NO # 3

(9)

Sol:-

Step 1:- (effective length)

$$\text{eff-length}(x) = \text{length} - \text{both side cov.}$$

$$= 2000 - 12 \times 50$$

$$= 1900$$

$$\text{effective length}(y) = 2000 - (2 \times 50)$$

$$= 1900 \text{ mm}$$

Step # 2 :- Find number of Bar:-

$$\Rightarrow \text{No. of bar}(x) = \frac{\text{effective length}}{\text{spacing}} + 1$$

$$= \frac{1900}{150} + 1$$

$$= 13.67$$

$$= 14 \text{ bars}$$

$$\Rightarrow \text{No of length of (bar)}(y)$$

$$= \frac{\text{effective length}}{\text{spacing}} + 1$$

$$= \frac{1900}{150} + 1$$

$$= 14 \text{ bar.}$$

Step # 03 Find cutting length :- ⁽⁴⁰⁾

$$\text{Along (x)} = [\text{effective length} + (\text{bend})] - \text{bent deduction}$$

$$= (1900 + 2(300 - 50 - 50)) - (2 \times 22 \times 12)$$

$$= 2300 - 48$$

$$= 2252 \text{ mm or } 2.25 \text{ m}$$

$$\text{along (x)} = [\text{effective length} + \text{bend}] - \text{bent deduction}$$

2d

$$= (1900 + 2(300 - 50 - 50)) - 2(2 \times 12)$$

$$= 2252 \text{ mm or } 2.25 \text{ m}$$

(14)

Sr. No	Types of Bar	Dia(mm)	No	length	total Length(m)	wei weight	Total weight	Notes
1	X direction	12	14	2.25	31.5	0.89	28	$\frac{12^2}{162} = 0.89$
2	Y direction	12	14	2.25	31.5	0.89	28	$\frac{12^2}{162} = 0.89$
						Total	56	
						Add 5% wastage	2.8	
						Gross weight	58.8	
							or	
							59 kg	

Q No # 4 (A)

(12)

Sol:-

$$\text{Dia of column} = 500 \text{ mm}$$

$$\begin{aligned} \text{Dia of stirrup } c/c &= 500 - (2 \times 40) \times (4+4) \\ &= 412 \text{ mm} \end{aligned}$$

$$\begin{aligned} \text{Parameter of } \overset{\text{stirrup}}{\text{stirrup}} &= \pi d \\ &= 3.14 \times 412 \\ &= 1294.5 \end{aligned}$$

$$\begin{aligned} \text{Hook length} &= 10 D \\ &= 10 \times 8 \\ &= 80 \times 2 \\ &= 160 \text{ mm} \end{aligned}$$

cutting length of stirrup

$$\begin{aligned} \text{Parameter of stirrup + Hook } L & \\ &= 1294.5 + 160 \\ &= 1454.5 \text{ mm} \\ &= 1454.5 / 1000 \\ &= \boxed{1.454 \text{ m}} \end{aligned} \quad \text{Ans}$$

Q No 4 (b)

(13)

Sol:-

Value of plot = 350,000

Rate of rent = 6%

$$\begin{aligned} \text{Annual rent of plot} &= 350,000 \times \left(\frac{6}{100}\right) \\ &= 21000 \end{aligned}$$

Value of building structure = 420000

Rate of rent = 8%

Annual rent for structure

$$= 420,000 \times \left(\frac{8}{100}\right) = 33600$$

total annual rent = 21000 + 33600

$$= 54600$$

$$\text{Monthly rent} = \frac{54600}{12}$$

$$= 4550$$

Q No # 5

(14)

Ans :- Types - Alternative dispute Resolution :-

1) Arbitration :-

Arbitration is the adjudication of a dispute by one or more specially appointed experts or lawyers. Arbitration involves an independent third party who actually make suggestion and actually imposes a decision on the parties. Arbitration is binding. The arbitration is governed by the arbitration act 1996.

2) Mediation :-

Parties in a dispute may refer their dispute to an independent third party who will act as a go-between

(15)

Mediation involves an impartial third party who listens and directs discussion but does not suggest outcome.

Mediation is not binding.

3) Negotiation :-

Negotiation requires parties to bargain without outside assistance exchanging compromises to reach a solution. In this approach parties can begin bargaining discussion at the beginning of a dispute without the presence of legal representation. Negotiation is also not binding.

Conciliation :-

similar to mediation but the conciliator may suggest a way to settle to the dispute. Conciliation is not binding.

Arbitration act - 1996, § 1. ⁽¹⁶⁾

- (a) The object of arbitration is to obtain the fair resolution of dispute by an impartial tribunal (equality) with unnecessary delay or expense.
- (b) The parties should be free to agree how their disputes are resolved, subject only to such safeguards as are necessary in the public interest.
- (c) In matters governed by this Part, the court should not intervene except as provided by this Part.

Arbitration act - 1996 § 9

where a party tries to ignore an arbitration clause agreed in a contract, the court in which he or she is trying to make his claim will order stay (ie - stop) of proceedings so that the matter may be referred to arbitration as agreed in the contract.

Arbitration act 1996 s 18⁽¹⁷⁾

- (1) The parties are free to agree what is to happen in the event of a failure of a procedure for the appointment of the arbitral tribunal. There is no failure if an appointment is duly made under section (17) (power in case of default to appoint sole arbitrator) unless that appointment is set aside.

Advantage of ADR :- (18)

- 1) more flexibility. In a case of arbitration.
- 2) select your own arbitrator or mediator.
- 3) A jury is not involved.
- 4) ~~Juries~~ expenses are reduced.
- 5) ADR is speedy.
- 6) The results can be kept.

Disadvantages of ADR :-

- 1) There is no guaranteed resolution.
- 2) Arbitration decisions are final.
- 3) Limit on arbitration award.
- 4) Discovery limitation.
- 5) Free for the neutral.
- 6) May have no choice.